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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/890490Applicant(s)
Fenn et alExaminer
NesslerGroup Art Unit
1767

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 12/21/98
- ☒ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1, 2, 4-10 is/are pending in the application.
- ☐ Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1, 2, 4-10 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____.
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☒ Notice of References Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

Art Unit: 1761

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 6, the recitation of "storage" is redundant, in view of the recitation earlier in the claim of "storage temperature". This recitation is apparently a word processing error. The comma should also apparently be deleted between "antifreeze" and "peptide" in line 2 of claim 1.

Claims 1, 2 and 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Clemmings et al or Warren et al, each in view of WO 92/22581 and applicants' admission.

First, regarding the product claims, either Clemmings et al or Warren et al disclose the use of antifreeze peptides in frozen confectionary products and mixes such as ice cream (also note that Clemmings includes water ice in his definition of frozen compositions--see lines 5-11 of column 1; while Warren teaches sherbet and popsicles in line 61 of column 11). The claims differ in the recitation of the aspect ratio. As admitted by the applicants in the first paragraph of page 2 of the specification, antifreeze peptides are known for their ability to influence the shape of ice crystals (according to WO 92/22581). The aspect ratio is a measurement of the shape of a particle, such as a crystal (typically a length ratio of the major to minor axis of the crystal). The

Art Unit: 1761

aspect ratio (shape) of the crystals is therefore considered to be a result effective variable, dependent upon, for example, the desired texture and mouthfeel of the final product, absent a showing of unexpected results. It would have been obvious to utilize the antifreeze peptides of either Clemmings et al or Warren et al, in the frozen confectionary products of each of the primary references, to influence the shape of the ice crystals formed in order to provide a desired aspect ratio and a desired texture. Also, note that the patentability of a product does not depend on its method of production. *In re Thorpe*, 227 USPQ 967 (Fed. Cir. 1985). Regarding claim 9, note that Clemmings teaches water ice while Warren teaches sherbet and popsicles as discussed above. Layering the ice cream and the water ice to produce a desired design is considered to be conventional.

Regarding the process claims, note in lines 11-22 of page 21 of WO 92/22581 that low concentrations of antifreeze proteins preferentially inhibit the a-axis growth, while at high concentrations, the crystals grow predominantly along the c-axis to form hexagonal bipyrimids. Therefore, WO 92/22581 teaches that the concentration of the antifreeze proteins influences the shape (i.e., the aspect ratio) of the ice crystals formed. Also note that WO 92/22581 teaches the application of the invention to ice cream and other frozen foods in lines 20-30 of page 30. It therefore would have been obvious to alter the conditions by controlling the concentration antifreeze proteins of either Clemmings et al or Warren et al to influence the shape of the ice crystals as taught by WO 92/22581.

Art Unit: 1761

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Griffith et al article "Antifreeze Proteins and Their Use in Frozen Foods" is of particular interest, teaching, in the "Conclusions" section found on page 393, that the concentrations and types of AFP's in frozen foods are selected, depending upon, for example, the range of temperatures used in processing, or the desired texture (at high concentrations, spicular ice formation may cause cellular injury; at low concentrations, the texture and flavor of frozen foods is maintained). Therefore, the type and concentration of the AFP's influences the shape (i.e., aspect ratio) of the crystals.

Arai et al teach frozen foods containing antifreeze proteins. Arai teaches concentrations within the presently recited range in line 20 of column 3. Note particularly lines 23-26 of column 3 of Arai, which teach "an amount of the antifreezing agent varies depending upon the desired storage temperature, kinds of product to be frozen, a rate of cooling, and the like". Therefore, Arai teaches that the amount of antifreezing agent present is a result effective variable.

Lee teach, in lines 37-41 of column 7, that the amount of material to be added to assist in ice nucleation according to the present invention will depend upon the nature of the material used and in particular on the temperature at which it will induce nucleation in supercooled water. Ice nucleating proteins are disclosed.

Fletcher et al teach that the number of fish antifreeze-expressing microorganisms added to the food product will depend on the properties of the microorganisms and of the food.

Art Unit: 1761

Arbuckle, "Ice Cream", third edition, on page 323, expressly teaches that the texture of ice cream is dependent upon variables such as the shape of the ice crystals (see the first and second paragraphs under the heading "Body and Texture Defects"). In the paragraph bridging pages 325 and 326, Arbuckle teaches that the texture also depends on the size of the crystals. In the first two lines of page 330, Arbuckle teaches that rate of freezing and hardening affect texture; and that fast freezing produces small ice crystals.

Perry's Chemical Engineering Handbook, sixth edition, teaches that the "aspect ratio" is used to describe the shape of a particle, and that the particle shape can be related to functional properties of the particles.

Gordon et al, in column 11, lines 10-40, teaches textbook information regarding the aspect ratio measurement. Lines 47-48 of column 3 of Nordhauser et al teach that the aspect ratio has historically been used to demonstrate particle shape.

Applicant's arguments filed December 17, 1998 have been fully considered but they are not persuasive.

The applicants argue that the Clemmings et al and Warren et al references do not recognize that the textural properties of an AFP containing frozen food are a function of the aspect ratio of its ice-crystals. However, first, Clemmings explicitly discloses that the smaller ice crystals in the anti-freeze protein treated yogurt resulted in a smoother texture and mouthfeel than that in the yogurt without AFP (see lines 58-60 of column 4). Even more importantly, it is

Art Unit: 1761

textbook knowledge that the shape of the ice crystals affects the texture of the frozen confection (see, e.g., page 323 of Arbuckle, "Ice Cream", third edition, discussed immediately above). Furthermore, the aspect ratio is a standard measurement which defines the shape of the particles, and has historically been used to demonstrate particle shape (see, e.g., Perry's Chemical Engineering Handbook, discussed above). Therefore, that the textural properties of a frozen confection are a function of the aspect ratio (i.e., shape) of the ice crystals, is textbook knowledge.

The applicants argue that Clemmings or Warren do not teach the presently recited aspect ratio. However, the shape (aspect ratio) of the crystals is a result effective variable, dependent upon, for example, the desired texture and mouthfeel of the food, absent a showing of unexpected results. To date, evidence of unexpected results has not been submitted.

Attention is invited to *In re Levin*, 84 USPQ 232 (1949) and the cases cited therein, which are considered relevant to the fact situation of the instant case, and wherein the Court stated on page 234 as follows:

This court has taken the position that new recipes or formulas for cooking food which involve the addition or elimination of common ingredients, or for treating them in ways which differ from the former practice, do not amount to invention, merely because it is not disclosed that, in the constantly developing art of preparing food, no one else ever did the particular thing upon which the applicant asserts his right to a patent. In all such cases, there is nothing patentable unless the applicant by a proper showing further establishes a coaction or cooperative relationship between the selected ingredients which produces a new, unexpected, and useful function. *In re Benjamin D. White*, 17 CCPA (Patents) 956, 39 F.2d 974, 5 USPQ 267; *In re Mason et al*, 33 CCPA (Patents) 1144, 156 F.2d 189, 70 USPQ 221.

Art Unit: 1761

In the absence of unexpected results, it is not seen how the claimed invention differs from the teachings of the prior art. Applicant's claims are drawn to a combination of known components which produces expected results. See *In re Kerkhoven*, 205 USPQ 1069 and *In re Gershon*, 152 USPQ 602.

Regarding the presently argued processing conditions, WO 92/22581 teach that the concentration of the anti-freeze proteins influences the shape/aspect ratio of the ice crystals as discussed in detail above.

The applicants argue that Clemmings is aimed at the minimization of the crystal size and not the crystal shape. WO 92/22581, however, teaches that the presence of antifreeze proteins inherently influences the shape. And again, that the textural properties of a frozen confection are a function of the aspect ratio (i.e., shape) of the ice crystals, is textbook knowledge. The aspect ratio is purely a measurement of a physical phenomenon (i.e., the applicants did not invent the aspect ratio itself).

The statement in lines 34-37 of page 5 of the present specification that "applicants believe that it is well within the ability of the skilled person to choose those conditions such that the aspect ratio of the ice crystals falls within the desired range" is also noted.

Receipt of the presently submitted terminal disclaimer is acknowledged. Between both applications the applicants are claiming nearly all aspect ratios possible (the present application recites aspect ratios in a range of more than 1.9, while the copending application recites ratios in a

Art Unit: 1761

range of 1.1 to 1.9). Both sets of claims recite frozen food/ice cream containing antifreeze proteins, where the frozen food/ice cream inherently has an aspect ratio. WO 92/22581 discloses that antifreeze proteins are known for their ability to influence the shape of ice crystals, as admitted by the applicants, and also disclose their use in frozen foods. Therefore the aspect ratio is considered to be a result effective variable, dependent upon, for example, the shape of the ice crystals formed and the desired texture and mouthfeel, absent a showing of unexpected results. The ice cream of either Clemmings et al or Warren each inherently have an aspect ratio which falls within the range of nearly all aspect ratios possible. Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of the claimed product. *In re Best, Bolton, and Shaw*, 195 USPQ 430 (CCPA 1977). When the claimed compositions are not novel they are not rendered patentable by recitation of properties, whether or not these properties are shown or suggested by the prior art. *In re Spada*, 15 USPQ2d 1655 (Fed. Cir. 1990), *In re Fitzgerald, Sanders, and Bagheri*, 205 USPQ 594 (CCPA 1980).

The applicants have argued that prior to the present invention, the use of antifreeze peptides in frozen foods was not known in commercial circles. However, the references clearly disclose the presence of antifreeze peptides in frozen foods/ice cream, as well as their use to influence the shape of ice crystals. Since the aspect ratio measures this property, the choice of a desired aspect ratio to suit the desired shape of the ice crystals and the desired texture or

Art Unit: 1761

mouthfeel of the final product is considered to have been obvious absent a showing of unexpected results.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any concerning this communication or earlier communications from the examiner should be directed to Cynthia L. Nessler whose telephone number is (703) 308-3843.

Cynthia L. Nessler
CYNTHIA L. NESSLER
PRIMARY EXAMINER
GROUP 1300